

## **2.4 TRAFFIC & TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES**

The information below is summarized from the project Traffic Operations/Impact Report, January 2006 which is available for public review at Caltrans District 4, 111 Grand Avenue, Oakland, CA 94610, and the Solano Transportation Authority, One Harbor Center, Suite 130, Suisun City, CA 94585 during normal business hours. This section discusses the project's impacts on traffic and circulation, both during construction (construction impacts) and after completion of the project (long-term impacts).

### **Regulatory Setting**

The Federal Highway Administration (FHWA) directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

The Department and FHWA are committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

### **Affected Environment**

#### **Existing Roadway Network**

I-80, I-680, and SR12 form the vital transportation backbone of the Solano County's roadway network and serve travel between the Bay Area, Sacramento, the Central Valley, the North Bay, and Lake Tahoe. These important facilities serve a number of users, including commuter traffic, regional through trips, goods movement, inter-city travel, and recreational traffic, both regional and local in nature. Over the years, traffic volumes have exceeded the available capacity at critical locations along these corridors resulting in long vehicle delays and backups during the typical weekday peak periods. Congestion levels are exacerbated by recreational travel, particularly on Friday afternoons and Sunday evenings. In addition, the anticipated new Benicia-Martinez Bridge and Toll Plaza scheduled for completion in 2007 will open up an existing bottleneck on I-680 and further impact the congestion levels and delays in this area, which have been mitigated in part by the recently completed Auxiliary Lane project that widened I-80 between I-680 and SR-12 East. During periods of high congestion levels on regional roadways, some regional vehicles spill over onto local roads in search of shortcuts causing local congestion on roads that were not intended for such a use.

As discussed in the Traffic Operations/Impact Report, queues and congestion occur at the following locations:

#### **A.M. Peak Hour**

1. WB I-80 – West Texas Street to I-680

### P.M. Peak Hour

1. EB I-80 – SR 12 (W) to Cordelia Truck Scales
2. EB I-80 – Travis Boulevard to Airbase Parkway
3. NB I-680 – South of Cordelia Road to I-80

The I-80/I-680 junction and the Truck Scales in Cordelia create major congestion on I-80 in Fairfield during both the AM and PM peak periods. The AM peak hour congestion on I-80 extends from the one lane off ramp at the I-80/I-680 junction to West Texas Street, a distance of nearly 4.5 miles. Heavy westbound on-ramp volumes from the SR 12 (E) and Air Base Parkway interchanges, the single-lane exit from westbound I-80 to southbound I-680, and entering trucks all contribute to the congestion during the AM peak period. During the PM peak periods, heavy eastbound on-ramp volumes from SR 12 (W), heavy volumes from northbound I-680, and the truck queues combine to create congestion on eastbound I-80.

To illustrate the extent of traffic congestion, Table 2.4-1 shows the traffic speeds at selected points in the study area.

**Table 2.4-1: Segment Speeds**

Location		a.m.	p.m.
		Speed (mph)	Speed (mph)
I-80		<i>Westbound</i>	<i>Eastbound</i>
	Red Top Road	50	No data
	I-680	10-30	5-30
I-680		<i>Southbound</i>	<i>Northbound</i>
	Cordelia Road	No data	0-25
	I-80	43	10

Source: Travel Time and Speed, Caltrans District 4 Traffic Operations (March 1-2, 2002).

Besides the high traffic demand, there are a number of roadway network issues and problem areas that contribute to transportation deficiencies within the study area.

### Incomplete Local Roadway Network

Some of the local roadways such as Mangels Boulevard, Rockville Road, and Cordelia Road do not provide complete east/west access through the study area parallel to I-80. Additionally, there are no local road connections to Red Top Road at the west end of the study area. As a result, local traffic relies heavily on I-80, which adds to the congestion on this I-80 segment and local roads such as Rockville Road and Cordelia Road are overloaded because of the lack of an arterial roadway network to serve local traffic. Many of these roads were originally agricultural roads designed for much lighter traffic volumes and risk accelerated pavement deterioration as a result of being overloaded with traffic.

### SR12

SR12 is the only east/west route connecting Sonoma, Napa, Solano, Sacramento, San Joaquin and Calaveras Counties. State Route 12 is concurrent with I-80 for about 3 miles or 5 km within the study area. Because of this configuration, SR12 mainline traffic must currently pass through the congested I-80/680/SR12 Interchange to complete a trip from American Canyon to Suisun City. SR12 through trips account for roughly 4 percent

of the mainline I-80 AM peak traffic and 5 percent of the mainline I-80<sup>1</sup> PM peak traffic within the study area. Only 16 percent of the westbound AM peak traffic from SR12 East and 21 percent of the eastbound PM peak traffic from SR12 West continue through to the segment of SR12 on the far side of the study area.

### **Incomplete Bike and Pedestrian Network**

The incomplete east/west local roadway network and agricultural origin of many roads in the study area have resulted in an incomplete network for bikes and pedestrians. For example, bicyclists arriving from the west on McGary Road face difficulties reaching destinations north of I-80 and SR12.

### **Other Local Roadways**

#### **Red Top Road**

This local road is a two-to-four-lane facility that runs from SR12 West to Lopes Road approximately half way between I-80 and Gold Hill Road. Red Top Road intersects I-80 with a diamond interchange and underpass.

#### **Green Valley Road**

Green Valley Road is a north/south arterial roadway with a partial interchange at I-80 immediately west of the I-680 ramps. There is no direct westbound off-ramp from I-80 to Green Valley Road. Neitzel Road and Business Center Drive provide a connection that allows westbound I-80 traffic exiting at Suisun Valley Road to reach Green Valley Road. South of I-80, Green Valley Road becomes Lopes Road.

#### **Suisun Valley Road**

Suisun Valley Road is a north/south arterial roadway with a partial interchange at I-80 immediately east of the I-680 ramps. There is no direct westbound on-ramp to I-80 from Suisun Valley Road. Neitzel Road and Business Center Drive provide a connection from Suisun Valley Road to Green Valley Road allowing westbound traffic to enter I-80.

#### **Abernathy Road/Chadbourne Road**

Abernathy Road is a North/South arterial in the study area and has a full diamond interchange with I-80. South of I-80, Abernathy Road becomes Chadbourne Road, which crosses SR12 East at a full diamond interchange.

#### **Rockville Road**

Rockville Road begins at the West Texas Street interchange with I-80 and runs west crossing Abernathy Road, Suisun Valley Road, and Green Valley Road. The west end intersects Green Valley Road about five miles north of I-80. It is currently the only continuous east/west road north of I-80 in the study area between Green Valley and the West Texas Street/westbound I-80 ramps. It currently carries some travelers trying to escape the congestion on I-80. However, it is only a two-lane road and is not designed or intended to be a major arterial for regional traffic.

#### **Business Center Drive**

Business Center Drive is one of the newer roads in the study area and runs through a primarily commercial area. It starts west of Green Valley Road and extends east past a

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<sup>1</sup> Feher and Peers Associates. Origin Destination Survey conducted November 2002.

three-way intersection with Neitzel Road before crossing Mangels Road and becoming West America Drive, which becomes Kaiser Drive when it crosses Suisun Valley Road. Business Center Drive is now one of the primary connections between Green Valley Road and Suisun Valley Road in the study area.

### Existing Traffic Conditions

Existing traffic volumes for regional roadways in the study area are presented in the form of daily and peak-hour volumes on I-80 and SR12. Traffic volumes for local roads are presented in the form of intersection turning movement counts. Peak-hour volumes for local roads can be derived from the adjacent intersection volumes.

For local traffic, intersections counts were made in late 2002 and early 2003 at a number of intersections in the study area.

The traffic volumes between December 1999 and September 2000 for state highways in the study area were obtained from Caltrans District 4, Traffic Operations Department. Their volumes were higher than the two-week sample collected in November 2002. In general, the weekday commuter traffic volume peaks in the morning period between 6 AM and 8 AM and in the evening between 4 PM and 6 PM, except where noted. The Saturday traffic volume tends to peak after 10 AM.

**Table 2.4-2: Traffic Volume Summary for Regional Roads**

Corridor	Tues to Thurs		Friday		Saturday	
	Daily	Peak Hour	Daily	Peak Hour	Daily	Peak Hour
I-80 eastbound at Red Top Road	54,100	4,960 (4-5 PM)	66,800	5,860 (4-5 PM)	60,750	4,170 (4-5 PM)
I-80 westbound at Red Top Road	49,740	3,810 (7-8 AM)	55,540	3,630 (6-7 AM)	53,178	3,610 (11AM-12PM)
SR12 eastbound on-ramp at I-80	14,100	1,296 (3-4 PM)	16,300	1,450 (3-4 PM)	12,800	974 (3-4 PM)
SR12 west bound off-ramp at I-80	16,600	1,465 (7-8 AM)	17,900	1,320 (7-8 AM)	14,800	1,310 (11AM-12PM)

Source: Caltrans (December 1999 – September 2000).

Both the Friday and Saturday daily volumes are higher than the Tuesday to Thursday average daily volumes. The Friday afternoon peak-hour volumes are also generally higher than the Tuesday to Thursday volumes. The increase in weekend traffic is attributed to the combination of recreational trips on Friday and Sunday PM peak hours and primarily shopping trips for the rest of the weekend.

### Level of Service

Traffic operational analysis was conducted using the methodology of the Transportation Research Board's 2000 Highway Capacity Manual for intersections, basic freeway sections, weaving areas, and ramp junctions. LOS of the freeway components is based on either vehicular density or weaving speed. LOS ranges from A, which indicates free flow or excellent conditions to F, which indicates congested or breakdown in vehicular

flow. LOS A, B, C, and D are considered excellent to satisfactory service levels, LOS E conditions are considered at capacity and LOS F conditions are considered congested.

**Table 2.4-3: Intersection Level of Service Definitions**

Level of Service	Description	Average Total Delay (seconds/vehicle)	
		Unsignalized Intersections	Signalized Intersections
A	Little or no delay	$\leq 10.0$	$< 10.0$
B	Short traffic delay	$> 10.0$ and $\leq 15.0$	$> 10.0$ and $< 20.0$
C	Average traffic delay	$> 15.0$ and $\leq 25.0$	$> 20.0$ and $< 35.0$
D	Long traffic delay	$> 25.0$ and $\leq 35.0$	$> 35.0$ and $< 55.0$
E	Very long traffic delay	$> 35.0$ and $\leq 50.0$	$> 55.0$ and $< 80.0$
F	Extreme traffic delay	$> 50.0$	$> 80.0$

Source: *Highway Capacity Manual 2000*, Transportation Research Board, Washington D.C. 2000.

Tables 2.4-4 and 2.4-5 provide the LOS evaluation of freeway segments within the study area. Currently, most freeway segments operate at LOS D or better. The westbound direction of SR12 West, in the vicinity of Red Top Road operates at LOS E in the AM peak hour.

**Table 2.4-4: Existing Freeway LOS Analysis – AM Peak Hour**

Location	Direction	No. Lane	Capacity	Volume	V/C	LOS
I-80 west of Red Top Road	Eastbound	4	8,000	3,110	0.39	A
	Westbound	4	8,000	4,040	0.51	A
I-80 east of West Texas Street	Eastbound	4+Aux	9,000	4,130	0.46	A
	Westbound	4+Aux	9,000	6,500	0.72	C
SR12 west, west of Red Top Road	Eastbound	1	1,600	750	0.47	A
	Westbound	1	1,600	1,460	0.91	E
SR12 West, East of Red Top Road	Eastbound	1	1,600	750	0.47	A
	Westbound	1	1,600	1,460	0.91	E
SR12 east, east of I-80	Eastbound	2	3,000	710	0.24	A
	Westbound	2	3,000	1,740	0.58	A
I-680 south of I-80	Northbound	2	4,000	1,385	0.35	A
	Southbound	2	4,000	2,470	0.62	B
I-680 south of Gold Hill Road	Northbound	2	4,000	1,500	0.38	A
	Southbound	2	4,000	2,680	0.67	B

Source: Caltrans (December 1999 – December 2000).

**Table 2.4-5: Existing Freeway LOS Analysis – PM Peak Hour**

Location	Direction	No. Lane	Capacity	Volume	V/C	LOS
I-80 west of Red Top Road	Eastbound	4	8,000	5,300	0.66	B
	Westbound	4	8,000	2,980	0.37	A
I-80 east of West Texas Street	Eastbound	4+Aux	9,000	7,330	0.81	D
	Westbound	4+Aux	9,000	4,680	0.52	A
SR12 west, West of Red Top Road	Eastbound	1	1,600	1,020	0.64	B
	Westbound	1	1,600	1,100	0.69	B
SR12 west, East of Red Top Road	Eastbound	1	1,600	1,020	0.64	B
	Westbound	1	1,600	1,100	0.69	B
SR12 east, East of I-80	Eastbound	2	3,000	1,030	0.34	A
	Westbound	2	3,000	1,000	0.33	A
I-680 south of I-80	Northbound	2	4,000	2,520	0.63	B
	Southbound	2	4,000	1,830	0.46	A
I-680 south of Gold Hill Rd	Northbound	2	4,000	1,900	0.48	A
	Southbound	2	4,000	1,520	0.38	A

Source: Caltrans (December 1999 – December 2000).

Table 2.4-6 provides the LOS at local intersections. Four stop-controlled intersections in the AM and three in the PM operate at LOS E or worse.

### Accident Data

Accident data for the three-year period between January 1, 1999 and December 31, 2001 was obtained from the Caltrans Accident Surveillance and Analysis System (TASAS). Three interchange areas were examined as part of the accident analysis: SR12 West/Red Top Road; SR12 East/Chadbourne Road; and I-80/Abernathy Road.

### SR12 West/Red Top Road

A total of 53 accidents occurred within approximately one mile of the SR12 West/Red Top Road intersection segment resulting in no fatalities and 18 injuries. At this intersection the accident rate is higher than the statewide average rate. The primary accident types reported for this intersection included rear end accidents (53 percent), broadside accidents (26 percent), and sideswipe accidents (11 percent). The primary collision factors for these accidents were unsafe speed (40 percent), failure to yield (19 percent), and other violations (19 percent).

Approximately 30 percent of the accidents occurred during the PM (4 to 6 PM) peak period. Over 60 percent of the accidents occurred in the eastbound direction, which is consistent with the higher number of accidents during the PM peak period. The accidents were spread fairly evenly throughout the week with Friday being the highest at 28 percent. About 6 to 19 percent of the accidents happened on a typical weekday. Saturday and Sunday each had 11 percent of the accidents.



**Table 2.4-6: Existing Level of Service at 18 Intersections**

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Level of Service	Average Delay (Seconds)	Level of Service	Average Delay (Seconds)
SR12 & Red Top Road <sup>1</sup>	1-way Stop	<b>F</b>	282.3	A	2.2
Rockville Road & Green Valley Road	4-way Stop	A	2.6	A	2.1
Mangels Boulevard & Green Valley Road	Signal	B-C	20.0	B	16.6
Business Center Drive & Green Valley Road	Signal	B	17.3	C	21.4
I-80 eastbound & Green Valley Road	3-way Stop	<b>F</b>	51.5	<b>F</b>	83.5
Rockville Road & Suisun Valley Road	Signal	B	14.4	B	12.0
Mangels Boulevard & Suisun Valley Road	Signal	B	13.0	B	18.6
Neitzel Road & Suisun Valley Road	3-way Stop	B	14.3	A	7.0
I-80 eastbound & Suisun Valley Road	Signal	B	16.1	<b>E</b>	60.6
Rockville Road & Abernathy Road	4-way Stop	B	18.4	<b>E</b>	43.8
I-80 eastbound & Abernathy Road	Stop	A	1.0	A	2.0
I-80 westbound & Abernathy Road	3-way Stop	<b>F</b>	71.6	D	26.4
SR12 westbound & Chadbourne Road	Stop	B	5.1	<b>F</b>	65.8
SR12 eastbound & Chadbourne Road	Stop	A	1.7	A	4.9
Mankas Corner & Abernathy Road	3-way Stop	<b>F</b>	353.2	B	11.5
Rockville Road & Oliver	Signal	C	22.0	C	32.5
I-80 eastbound & W. Texas Street	Signal	B	10.2	B	10.5
Courage & Chadbourne Road	2-way Stop	A	1.8	A	2.4

<sup>1</sup> The delay shown is the weighted average for the intersection. SR12 operates at LOS A. Red Top Road experiences LOS F with significant delay on the northbound left during AM peak.

### **SR12 East/Chadbourne Road**

The SR12 East/Chadbourne Road interchange had a lower number of accidents and accident rates than the SR12 West/Red Top Road intersection. A total of 19 accidents occurred at this location resulting in seven injuries during the three-year period. At this interchange, all accident rates were lower than the statewide average rates. The primary accident types reported for this location included rear end accidents (37 percent), hit object accidents (32 percent), and overturning accidents (11 percent). The

primary collision factors for these accidents were improper turns (26 percent), other violations (21 percent) and speeding (16 percent).

Approximately 10 percent of the accidents occurred during the 4 to 6 PM peak period. Another 31.5 percent of accidents occurred between 10 AM and 1 PM. However, because of the small number of total accidents this does not suggest an accident trend inconsistent with a uniform distribution of accidents throughout the day. Wednesday had the most accidents (26 percent), followed by Sunday (21 percent), Tuesday (16 percent), and Friday (16 percent).

### **I-80/Abernathy Road**

A total of 72 accidents occurred at the I-80/Abernathy Road interchange over the three-year period, resulting in no fatalities and 20 injuries. Accident rates at this location were somewhat less than the statewide average accident rates. A review of the TASAS summary report indicates that the primary types of collision reported for this segment included rear end accidents (54 percent), fixed objects accidents (21 percent), and sideswipe accidents (19 percent). The primary collision factors for these accidents were unsafe speed (51 percent), other violations (21 percent), improper turn (10 percent) and causes other than the driver (8 percent).

Approximately 30 percent of the accidents occurred during the 6 to 8 AM peak period and 19 percent of the accidents occurred during the 4 to 6 PM peak period. The accidents are spread fairly evenly throughout the week with Friday being the highest at 18 percent. About 11 to 15 percent of the accidents happened on a typical weekday. Sunday had 15 percent of the accidents.

### **Impacts**

#### **Future Travel Forecasts**

The Napa Solano County travel forecasting model was used for estimating future traffic volumes and determining impacts on parallel and adjacent facilities. Traffic volumes on regional roadways and turning movements at the key intersections are analyzed for the AM and PM peak hours, based on data from this travel forecasting model.

The year 2020 has been used as the future analysis year for evaluating traffic impacts of the proposed project. Additionally, the year 2030 has been selected as the analysis year for cumulative conditions. For the 2020 analysis, two scenarios were evaluated; one without the project (No Project conditions) and one with the proposed project. The comparison of these two analyses provides information as to the potential traffic impacts and benefits of the proposed project.

#### **Network Assumptions**

A “No Action” scenario has been developed to represent the highway network that can currently be funded within the study area. For the purposes of the study, it is assumed that the Jameson Canyon project would be complete between 2020 and 2030, and that a portion of the I-80/I-680 interchange will also be complete by 2020. These two elements, together with other network enhancements, are described in No Project 2020 Scenario (or base case). The 2020 No Project with North Connector includes the geometry of the base case and the North Connector.



## **Year 2020 Analysis Assumptions**

### No Project 2020 Scenario

The No Project 2020 Scenario consists of the existing network throughout Solano County, plus the following planned improvements:

- The Caltrans SR 12 West truck climbing lane project. This project adds a second lane to westbound SR 12 from just past the SR 12/I-80 off-ramp to approximately 700 meters west of Red Top;
- An HOV lane on I-80 in both directions between SR 12-west and Air Base Parkway;
- Construction of the Collector/Distributor (C/D) roadway system for eastbound traffic on I-80 from SR 12-west to Suisun Valley Road and braiding of off/on-ramps. The sketch has been amended to eliminate a ramp between SR 12 West and the C/D roadway;
- The four-lane Jameson Canyon Project. This assumes an early completion date. Outside of Solano County, the network is representative of the MTC Regional Transportation Plan (RTP) for the year 2020. It includes a westbound HOV lane on I-80 from the Carquinez Bridge to SR 4 in Hercules, and HOV lanes in each direction on I-680 from the Sacramento River to SR 4 in Concord. It also includes the two Sacramento bridge widening projects that are currently under way.

### 2020 with Proposed Project Scenario

This analysis scenario uses the No Project 2020 Scenario as the starting point and adds the proposed project to the roadway network. The North Connector has been modeled as a two-lane arterial between Red Top Road and the current western terminus of Business Park Drive. The eastern portion of the North Connector has been modeled as a four lane expressway.

### 2030 Analysis Scenario

The year 2030 analysis scenario represents the cumulative conditions with and without the proposed project. The road network for 2030 would include improvements discussed for the 2020 analysis scenarios and other roadway network improvements that are anticipated to be constructed by 2030.

## **Acceptable LOS Conditions - West, Central, and East**

### **West End**

The project would create a new at-grade intersection at SR12 West at Red Top Road. This intersection could cause substantial delay and queues if not properly designed. As a result a detailed analysis of this intersection was performed to determine the appropriate design of the intersection to accommodate 2020 traffic volumes. Details of the SR 12/Red Top Road/North Connector intersection configuration analysis are provided in the Traffic Operations/Impact Report Technical Memorandum 3 (Technical Appendix D).

The SR 12 West/Red Top Road/North Connector intersection would require the following modifications to accommodate projected 2020 traffic volumes and operate at a LOS D in the future. These modifications have been included in the project description and design of this intersection as shown in Figure 1.3.

### *Eastbound SR 12*

- Dual left turn lanes - 550 feet (165 meters) single lane width and 200 feet (60 meters) double lane width, with staggered tapers;
- Right turn pocket / deceleration lane – 400 feet (120 meters) in length;
- Two through lanes starting 1,000 feet (300 meters) before the intersection and ending 1,000 feet (300 meters) after; and
- “SIGNAL AHEAD” sign with flashing yellow beacon 1,000 feet (300 meters) in advance of the intersection.

#### *Westbound SR 12*

- Left turn pocket - 250 feet (75 meters) in length;
- Right turn pocket / deceleration lane – 300 feet (90 meters) in length;
- Extra through lane provided by truck climbing lane;
- Queue monitor detectors 1,200 feet (360 meters) in advance of the intersection used to increase cycle length when needed;
- “Keep Clear” pavement markings in the intersection; and
- Queue detectors on the westbound departure leg of the intersection used to cut off phases that feed traffic departing in the westbound direction in non-peak conditions when queues are not reaching the off ramp.

#### *Northbound Red Top Road*

- Dual left turn lanes – 165 feet (50 meters) in length; and
- Two through lanes starting 600 feet (180 meters) before the intersection and ending 800 feet (240 meters) after.

#### *Southbound North Connector (Business Center Drive)*

- Left turn pocket - 250 feet (75 meters) in length;
- Right turn lane with no right turn on red – 500 feet (150 meters) in length; and
- Two through lanes starting 600 feet (180 meters) before the intersection and ending 600 feet (180 meters) after.

Although the intersection itself as a stand alone body has the capacity to serve the year 2020 volumes reaching the intersection, the downstream capacity constraint posed by the single westbound lane over the summit would cause queues to develop at the west end of the truck climbing lane on westbound SR 12. During peak periods queues from the west end of the climbing lane would extend through the intersection and onto the off ramp from westbound I-80. When such congestion develops there would be queue spillback onto the I-80 westbound shoulder lane as currently occurs. Although the proposed queue monitor detectors would help to minimize the likelihood of the signal contributing to this queue during off peak periods, the ultimate solution is to eliminate the merge at the end of the truck climbing lane which would be the source of the long queues. Specifically, this would require widening the full length of Jameson Canyon Road to two westbound lanes. The future I-80/I-680/SR 12 interchange project and the Jameson Canyon widening project would provide for an auxiliary lane on westbound I-80 between the Green Valley Road on ramp and the SR 12 West off ramp, a two-lane off-ramp from I-80 to Jameson Canyon, and an interchange at Red Top Road, thus replacing the proposed intersection with grade separation and ramps.

There would also be an eastbound queue spillback from the SR 12 eastbound I 80 on-ramp in peak periods affecting the operation of the signalized intersection. When this

condition develops there would be queue spillback onto the approach of SR 12 to the intersection affecting the intersection operation.

Between SR12 West and Business Center Drive, the volumes on the North Connector are forecast to be 400-600 cars in the AM peak hour and 250-350 cars in the PM peak hour. The proposed 2-lane roadway in each direction can accommodate these levels of traffic and provide acceptable levels of service.

### **Central Section**

The intersections of the North Connector at Suisun Valley Road and West America Drive would operate as at LOS D or better. Both intersections would be controlled by actuated and coordinated traffic signals. The critical intersection of the North connector at Suisun Valley Road would operate at LOS C or better during the peak hours. The recommended turn lane lengths would allow new intersections east of Suisun Valley Road to operate at LOS D or better.

### **East End**

The East End of the North Connector is forecast to carry approximately 2,000 vehicles in the peak direction-westbound in the AM, eastbound in the PM, during the peak hour. This level of traffic can be accommodated by the proposed four lane expressway in this segment of the project.

Study intersections in the East End include intersections on Abernathy Road and Chadbourne Road between Rockville Road and Courage Drive.

With construction of the North Connector and year 2030 traffic volumes, each approach at the intersections along Abernathy Road and Chadbourne Road can operate at acceptable levels of service (LOS D or better). The analysis showed that addition of the North Connector improved traffic operations at some locations but still required the following improvements to meet LOS D and maintain desirable arterial traffic operations.

The proposed improvements that have been included in the project are:

- Eastbound SR 12 off-ramp to Chadbourne Road – add eastbound right-turn pocket
- Abernathy Bridge over I-80 – eliminate northbound left turn onto I-80 westbound ramp and provide full length southbound left turn lane
- Chadbourne Road undercrossing of SR 12 – one full length left-turn lane in each direction

### **Summary of LOS Conditions No Project 2020 and 2020 with Project**

The Traffic Operations/Impact Report illustrates forecast conditions in the study area for the year 2020 without the North Connector assuming completion of the following funded projects:

- Leisure Town Road Park and Ride;
- Bella Vista Road Park and Ride;
- Fairfield Transportation Center Phase 2;
- Red Top Road Park and Ride Phase 1;
- Leisure Town Road Interchange Improvement; and
- Widen EB I-80 / I-680 to SR 12(E)

Westbound delays on I-80 in the morning peak hour will reach approximately 17 minutes through Vacaville and Fairfield, and approximately 10.5 minutes through Vallejo, by the year 2020. Similarly, with no improvement, eastbound delays during the evening peak hour will grow to approximately 5 minutes for vehicles on I-80 and I-680, by the year 2020. Projected mainline delays have the potential to add delays or queuing at on-ramps to the backed up section such as the ramp from eastbound SR 12(W) to eastbound I-80 which will experience added delays corresponding to those on eastbound I-80.

**Table 2.4-7 Summary of LOS Analysis- No Project 2020 and 2020 with Project**

Intersection	Analysis Year	Peak Hour	No Project 2020	With Project 2020
		Level of Service (Average Total Delay in Seconds)		
SR 12 & Red Top (1)	2020	AM	F (**)	F (213.1)
		PM	F (**)	F (80.1)
Rockville & Green Valley		AM	A 7.6	A 7.4
		PM	A 3.9	A 7.1
Mangels & Green Valley		AM	C 31.8	C 34.2
		PM	C 32.5	C 31.2
Business Center & Green Valley		AM	C 20.3	D 44.1
		PM	C 33.3	C 33.8
Rockville & Suisun Valley		AM	C 25.6	C 22.3
		PM	B 15.8	B 14.9
Mangels & Suisun Valley	2030	AM	B 19.0	F 86.4
		PM	C 26.8	D 42.9
Nietzel & Suisun Valley		AM	C 15.9	C 15.9
		PM	B 12.5	B 12.5
I-80 EB & Suisun Valley		AM	C 31.4	D 36.3
		PM	F 122.0	F 85.0
Rockville & Abernathy	2030	AM	E 35.6	F 76.7
		PM	C 15.4	C 19.5
I-80 EB Ramps & Abernathy	2030	AM	A 1.5	A 0.8
		PM	A 2.3	F 75.1
I-80 WB Ramps & Abernathy	2030	AM	D 26.7	F 248.4
		PM	B 14.7	F 282.0
SR 12 WB & Chadbourne	2030	AM	C 25.8	E 61.6
		PM	B 18.2	C 21.3
SR 12 EB & Chadbourne	2030	AM	D 27.7	D 26.5
		PM	F 101.4	F 124.6
Mankas Corner & Abernathy		AM	B 10.1	B 10.0
		PM	B 10.2	A 9.3
Rockville & Oliver		AM	F 252.1	F 226.1
		PM	F 180.9	F 173.2
I-80 EB & W. Texas		AM	B 13.4	B 14.0
		PM	B 14.6	B 16.2
Courage & Chadbourne	2030	AM	D 26.6	D 30.7
		PM	A 4.9	A 4.5

Intersection	Analysis Year	Peak Hour	No Project 2020	With Project 2020
		Level of Service (Average Total Delay in Seconds)		
I-80 EB Ramp & Red Top Rd		AM	F 106.7	F 108.5
		PM	F 172.6	F 315.9
I-80 WB Ramp & Red Top Rd		AM	F **	F **
		PM	F **	F 146.3
Pittman & Central		AM	B 16.9	B 17.2
		PM	C 22.6	C 22.4
Chadbourn & Automall Parkway	2030	AM	B 17.7	B 18.8
		PM	B 14.8	B 16.0
Abernathy & North Connector	2030	AM	NA	C 34.0
		PM	NA	F 98.7

Notes:\*\* Delay exceeds meaningful range of the model.

(1) SR 12/Red Top Road is analyzed as an interchange with a pair of two-waystop controlled ramp intersections.

### Avoidance, Minimization and Mitigation Measures

The portions of the North Connector located within Solano County (West End and East End) would not pass through densely populated areas. Pedestrians are not likely to use sidewalks in these areas because there are few points of destination in the near vicinity. In addition, pedestrian activity in predominately agricultural areas can create conflicts (pesticide/herbicide use, vandalism). In the East End area, alternative pedestrian and bicycle access is already provided by the Fairfield Linear Park. As a result, the lack of sidewalks along these portions of the proposed roadway is not considered a substantial adverse effect.

#### West End

The existing bike route is along Mangels Blvd which dead ends near the West End. With the project bicyclists would be able to use the new roadway to get to SR12 West and Red Top Road. They could use the signal to cross SR12 West and then follow the current bike path along Red Top Road to McGary Road, which leads to Vallejo.

#### East End

Bike facilities in the East End consist of the Fairfield Linear Park, which crosses over Suisun Creek.

### Impacts to Bicycle and Pedestrian Circulation

**Impact TRAF1:** A small portion of the Fairfield Linear Park Bicycle Trail along the west side of Suisun Creek would be replaced and depressed to cross under the new bridge that would span Suisun Creek.

**Mitigation Measure TRAF 1:** Directional bicycle signs shall be installed prior to construction. The signs shall demarcate alternative routes, and shall be continuous and consistent with the City of Fairfield and Solano county Bicycle Plans, paths, lanes and routes.

**Impact TRAF 2:** A new intersection would be construction at the Red Top Road/ North Connector, potentially impacting and existing bicycle path located north of SR12 West.

**Mitigation Measure TRAF 2:** The bike path at the Red Top Road/ North Connector intersection shall remain 12 feet wide. Coordination with the City of Fairfield shall take place to provide proper signage and a controlled turning movement for right turns for bicyclists at this intersection.